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eLINE® Lite Dispenser

Instruction Manual



BIOHIT

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1. INTENDED USE

This liquid handling device is designed and manufactured to be used with the IVD-product as an IVD-accessory and as a stand alone laboratory equipment.

2. PRODUCT DESCRIPTION

The Biohit *e*LINE Lite is an electronic dispenser for the multiple dispensing of the liquids. The dispenser offers you the latest technology and innovations in the field of the hand held liquid handling devices. The attractive and ergonomic design of the *e*LINE Lite together with an unique electronic tip ejection operation take the effort out of multiple dispensing and reduce the risk of repetitive strain injuries (RSI) that are common in mechanical pipetting.

The microprocessor controlled system and the superior construction of the Biohit *e*LINE Lite Dispenser enable maximum liquid handling performance with high levels of accuracy and precision.

The *e*LINE Lite Dispenser uses positive displacement principle, and is thereby an ideal tool for

- Long pipetting series
- Viscous, infectuous and high vapour pressure liquids
- Radioactive and toxic liquids

Biohit *e*LINE Lite Dispenser

Cat. No.	73080X

X: 0=Without adaptor; 1= With universal AC-adaptor (Euro, USA/Jpn, UK and China plugs)

Biohit Dispenser Tips

Cat. No.	Tip volume (ml)	Type	Volume min/max(µl)	Increment (µl)	Number of dispensings min/max	Qty/ Unit
792017 792026	0.1	Non Sterile Pre-sterilised	1/100	0.2	1/100	100
792018 792027	0.2	Non Sterile Pre-sterilised	2/200	0.4	1/100	100
792019 792028	0.5	Non Sterile Pre-sterilised	5/500	1	1/100	100
792020 792029	1.0	Non Sterile Pre-sterilised	10/1000	2	1/100	100
792021 792030	2.5	Non Sterile Pre-sterilised	25/2500	5	1/100	100

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Cat. No.	Tip volume (ml)	Type	Volume min/max(µl)	Incre-ment (µl)	Number of dispensings min/max	Qty/ Unit
792022 792031	5.0	Non Sterile Pre-sterilised	50/5000	10	1/100	100
792023 792032	10.0	Non Sterile Pre-sterilised	100/10 000	20	1/100	100
792024 792033	25.0	Non Sterile* Pre-sterilised*	500/25 000	50	1/50	25
792025 792034	50.0	Non Sterile* Pre-sterilised*	1000/50 000	100	1/50	25
792038	Dispenser Tips Starter Kit includes: • 0.5 ml/20 pcs • 1,0 ml/20 pcs • 2.5 ml/20 pcs • 5.0 ml/20 pcs • 10.0 ml/20 pcs					

* 1 adapter included

Note: The tips are disposable, do not reuse them!

3. QUICK START

3.1. Unpacking

The Biohit *e*LINE Lite Dispenser package contains:
- *e*LINE Lite Dispenser
- Tilting piece
- Instruction manual
- Performance certificate in accordance with ISO 8655-5
- Demo package of the Tips
  - 0.1 ml, 1 pc
  - 0.2 ml, 1 pc
  - 0.5 ml, 5 pcs
  - 1.0 ml, 5 pcs
  - 2.5 ml, 5 pcs
  - 10.0 ml, 5 pcs
  - 25.0 ml, 1 pc
  - Adapter for 25 ml tip, 1 pc
  - AC-adaptor (if ordered)

Please check that all items are included and no damage has occurred during shipment.

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3.2. Charging the Dispenser before first use

The battery is protected against discharging during storage with a plastic protector. Before use remove the plastic protector (Fig. 1.)

1. Push the charging buttons simultaneuously in order to open the battery cover
2. Remove the plastic protector

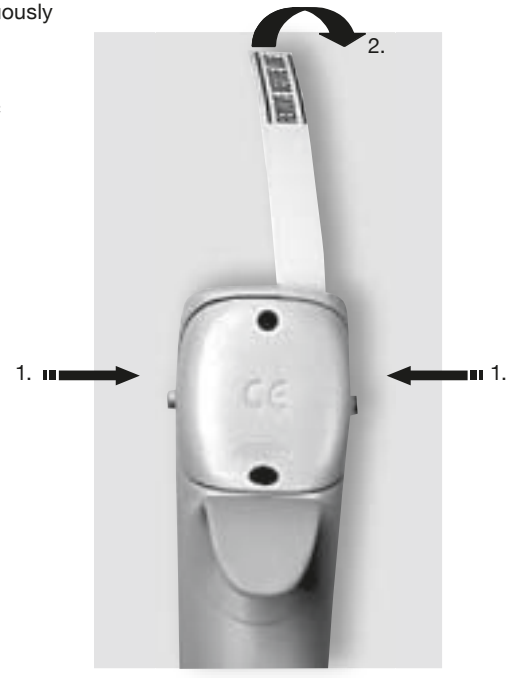


Fig. 1.

Note: It is recommended to charge the pipette for 12 hours before initial use. The pipette may only be charged with original Biohit *e*LINE Charging Stand, Charging Carousel or Biohit *e*LINE AC-adaptor (See Section 3.)

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3.3. Operating Instructions

The control and programming of the Biohit *e*LINE Lite Dispenser is performed using the display, keyboard, operating buttons and tip. (Fig. 2 and 3.)

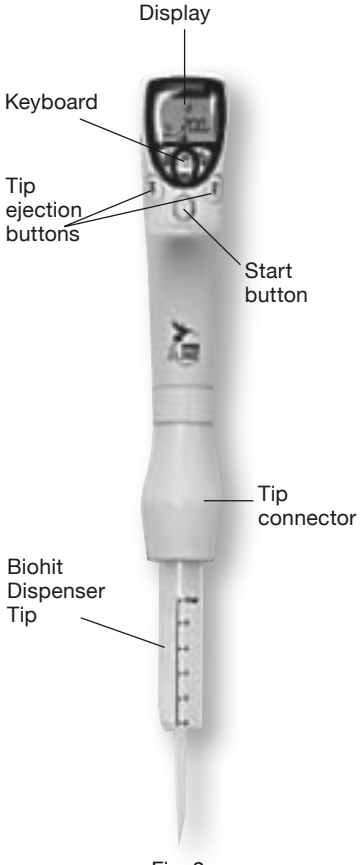


Fig. 2.

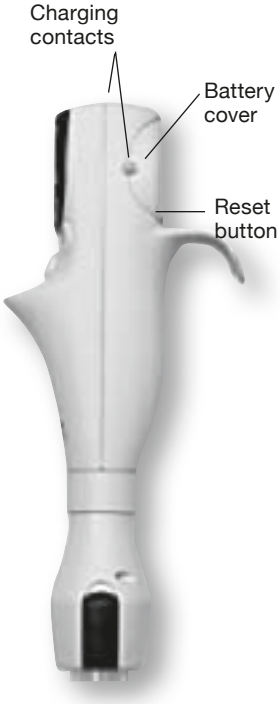
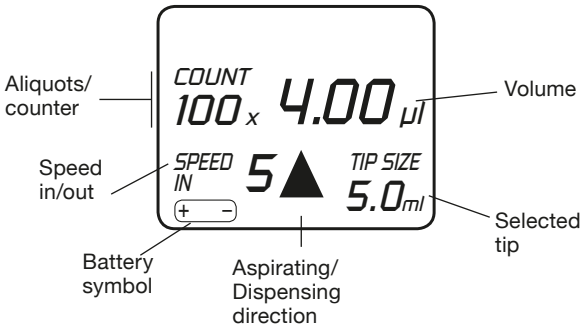


Fig. 3.

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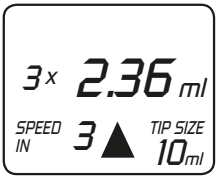
3.3.1. Display



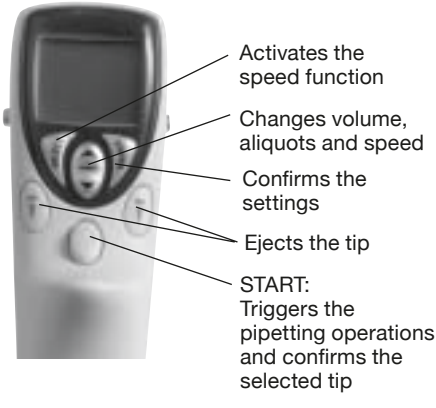
Note: When the dispenser is not connected to the charging unit the dispenser/ display will automatically hibernate after 10 minutes. The dispenser can be switched on by pressing any key.

3.3.2. Operating Modes

The *e*LINE Lite Dispenser features multiple dispensing mode with Tip Guide. The Tip Guide is a unique built-in guide that selects the optimal tip size according to selected volume and number of dispensings.



3.3.3. Keyboard and operation buttons



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3.3.4. Reset Button

To reset the dispenser, press the reset button on the battery cover. The display shows **E** and **TIP** in blinking form and pressing the tip ejector button will reset the pipette to the **d**-mode.

Note: The dispenser should never be reset during pipetting! Resetting will cause the plunger to move to the home position and it will empty the contents of the tip. The tip is also ejected in the end.

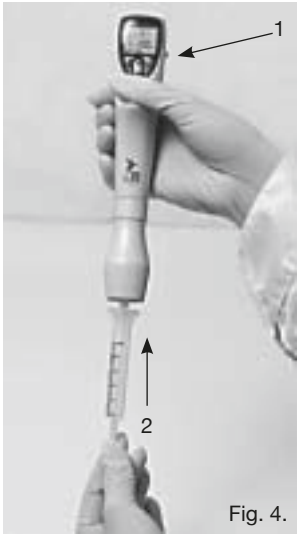


Fig. 4.

3.3.5. Start Button

The start button triggers the aspiration and dispensing operations according to the selected operating mode. Only a soft touch is required to operate the button.

3.3.6. Tip Attachment and Ejection

Tip attachment

1. Push the tip into the tip connector. **Make sure that the tip is properly attached.** (Fig. 4.)

2. Confirm the tip size by double clicking the Start-button according the instruction on the page 15.

Releasing the tip:

1. Press the Tip Ejection button. The tip is released immediately (Fig. 5.)

Note: After the dispensing cycle has been completed a small residual amount of fluid may have been left in the tip. During the tip ejection it is possible that a part of the remaining fluid comes out of the tip. Therefore it is recommended that the tip ejection is performed above a waste container.



Fig. 5.

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4. CHARGING OF THE DISPENSER

The Biohit *e*LINE Lite Dispenser should be charged using the original Biohit *e*LINE Charging Stand, Charging Carousel or AC-adaptor.

When the dispenser is properly connected to the charger, the led indicator (Fig. 6.) lights up and stays on as long as the dispenser is connected to the charger.

When the dispenser requires charging, the battery symbol and “lo bat”-text will appear in the display (Fig. 6.). You need to confirm that by pressing “enter”, only after that you can complete your work, and/or start charging the dispenser. Please note that if “enter” is not pressed the dispenser will not start charging, even placed in charging stand/connected to AC-adaptor.

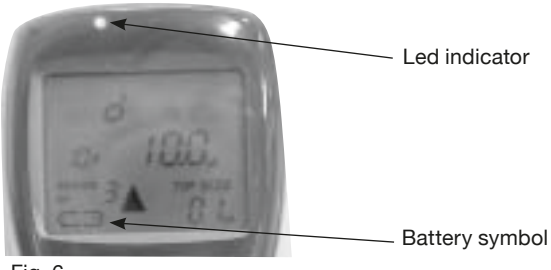


Fig. 6.

Note: In case you continue to work with the dispenser after the low bat-alarm, the battery will eventually be completely discharged. Then the battery-symbol and led indicator start to blink, and there is no response from operating buttons. Charge the dispenser.

Initial charging of 30 minutes is required before use, if the battery is totally discharged. During that time the “Load”-text is displayed and you can’t use the dispenser.

When the text disappears from the display, you can continue to work with the dispenser keeping it still connected to the charger.

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4.1. Charging with the Biohit *e*LINE Charging Stand and Charging Carousel

The Biohit *e*LINE Charging Stand and Carousel are desktop charging units.

The Charging Stand accommodates one Biohit *e*LINE and Charging Carousel four Biohit *e*LINE Dispensers.

The Charging Stands and Carousels operate through the metal contacts placed in the sides of the Dispenser and the head of the Charging unit. (Fig. 7.)

Before operating the AC-adaptor must be connected to the socket at the rear of the Charging Stand (Fig. 7.) as well as to the electrical outlet. Before connecting the AC-adaptor to the electrical outlet, check that its voltage setting corresponds to the voltage setting of your electrical outlet.

Note: The Charging Carousel is used to charge the dispenser without the tip. If you need to charge the dispenser with the tip attached, you can use the Charging Stand with the Tilting Piece mounted (Fig. 8.).


Fig. 7.


Fig. 8.

Cat. No.	Product
730981	Biohit *e*LINE Charging Stand
730991	Biohit *e*LINE Charging Carousel

With universal AC-adaptor (Euro, USA/Jpn, UK and China plugs)

1. Check that the plastic protector is removed and the battery cover is properly closed
2. Place the dispenser into the Charging unit. Make sure that the metal contacts at the sides of the dispenser are properly fitted to the tracks of the metal contacts in the Charging head.

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3. When charging, the battery-symbol and the led indicator will be displayed. The charging time for completely discharged batteries is 6 hours (initial charge 12 hours).
4. When the battery is fully charged the battery-symbol disappears from the display. Otherwise the display will stay on and other information on the display will be visible.

4.2. Charging through direct charging system

The AC-adaptor supplied with the Biohit *e*LINE Lite Dispenser or Charging Stand can be used for direct charging of the Biohit *e*LINE Lite Dispenser. The socket for the AC-adaptor is placed at the back of the dispenser (Fig. 9.)



Fig. 9.

Cat. No.	Product
731108	Biohit *e*LINE universal AC-adaptor, (Euro, USA/Jpn, UK and China plugs)

1. Before connecting the AC-adaptor to the electrical outlet, check that its voltage settings corresponds to the voltage settings of the electrical outlet.
2. Check that the battery protector is removed and the battery cover is properly closed.
3. Connect the AC-adaptor to the electrical outlet as well as to the socket at the back of the dispenser
4. The charging time is 6 hours for the completely discharged battery.
5. When the battery is fully charged the battery-symbol disappears from the display. Otherwise the display will stay on and other information on the display will be visible.

Note: It is possible to continue pipetting while the *e*LINE Lite Dispenser is charged through the AC-adaptor. With fully discharged battery 30 minute initial charging is recommended before continuing the pipetting.

4.3. Charging Recommentations

When the *e*LINE Lite Dispenser is not in use it is recommended to keep it always in the charging unit. This ensures that the battery is kept fully charged and the pipette is always ready for use.

However, during long storage periods (holidays etc.) it is recommended to disconnect the Charging Stand and Carousel from the mains outlet. It is also advisable to remove the battery pack from the dispenser. This protects the batteries against discharging during the long storage period.

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Note: The battery won't get damaged when the dispenser is kept on the charging unit: the charging process is intelligently controlled by a microprocessor.

Note: If battery is kept as full as possible, it will lengthen its lifetime.

4.4. Electrical specifications

Battery
- Rechargeable NiMH battery back with protection circuit
- 4.8 V, 500 mAH
- Charging time 6 hours for empty batteries
- Initial Charging 12 hours

AC-adaptor for Charging Stand or direct charging
- Input voltages and main plug according to local requirements
- Output voltage 9 VDC, 360 mA

AC-adaptor for Charging Carousel
- Input voltages and main plug according to local requirements
- Output voltage 9 VDC, 1200 mA

5. PROGRAMMING PRINCIPLES

Multiple dispensing

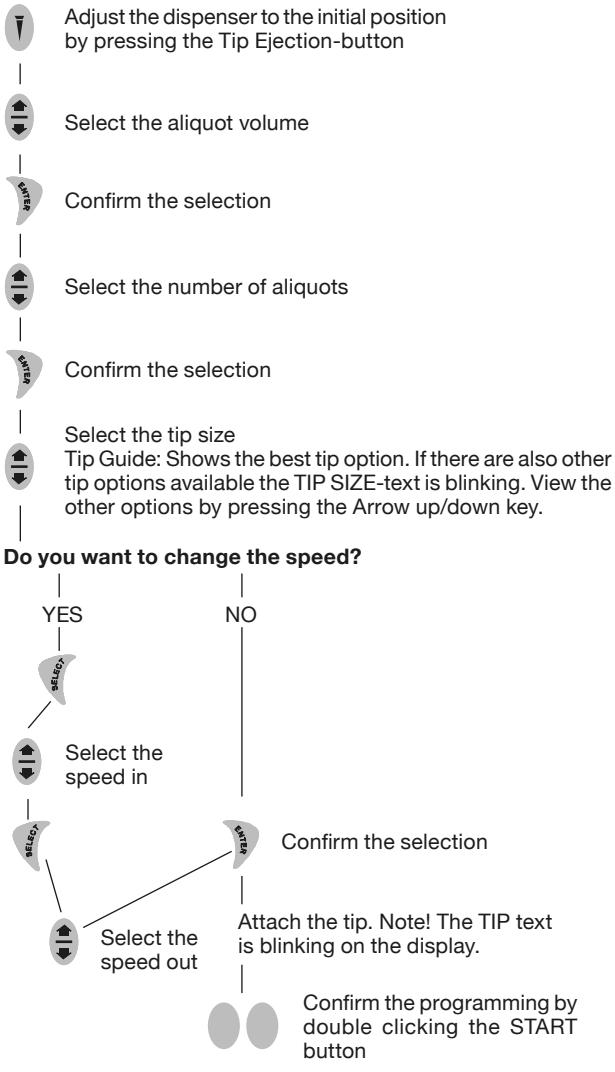
The Biohit *e*LINE Lite Dispenser features multiple dispensing mode with unique built in Tip Guide that selects the optimal tip size for you.

In this mode the Dispenser performs repetitive dispensing of a selected volume. The sum of the dispensing aliquots and an automatically selected excess volume is aspirated into the tip. The excess volume is needed to ensure equal operating conditions for each dispensing step.

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5.1. Programming Map

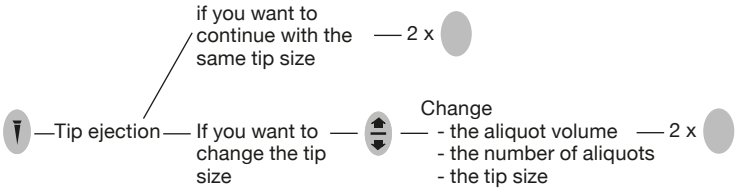
Multiple dispensing using Tip Guide



Note! Dispenser is now fixed to the selected tip!

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Tip confirmation after tip ejection



5.2. Programming of the multiple dispensing mode using the TipGuide

1. Adjust the Dispenser to the initial position by pressing .
   Note: The tip will be ejected if it is attached!



2. Select the desired aliquot volume by pressing
   Note: When holding down the the volume display start to scroll faster

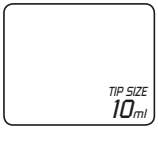
3. Press to confirm the selection



4. Select the number of aliquots by pressing

5. Press to confirm the selection

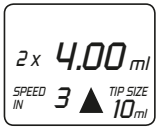
6. Now the TipGuide shows the best tip option. If there are also other tip options available, the Tip-size text is blinking. View the other options by pressing



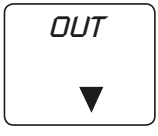
7. Confirm your selection by pressing and continue from step 12.
   Or press to change the aspiration/dispensing speeds.

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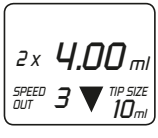
8. Select the speed in with (1=Min and 5=Max)
9. Press or to confirm selection and to display the speed out
10. Select the speed out with (1=Min and 5=Max)
11. Press to confirm selection
12. Now the text “TIP” is blinking on the display. **Attach the tip**
13. Confirm the programming by double clicking the START-button
    Note: Dispenser is now fixed to the selected tip volume range
14. Place tip into the liquid and press START-button to aspirate



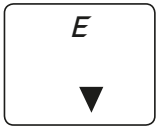
15. Discard the prime excess by pressing the START-button



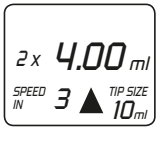
16. To dispense, position the tip above the receiving vessel and press START-button and repeat until the cycle is completed



17. Finally position the tip to discard excess volume and click twice the START-button



18. Now the Dispenser is ready for next pipetting cycle



Note: It is also possible to continue to aspirate and dispense the same volume without the empty function. To continue, keep the START-button pressed during the last dispensing and within one second the direction of the arrow will change. Keeping the START button depressed, place the tip into the liquid again and then release the START button to aspirate the next sample.

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If you continue with the same tip

a. Change the volume by pressing 
b. Confirm your selection by pressing 

c. Change the number of aliquots by pressing 
d. Confirm your selection by pressing 

If you want to change the tip size or tip, go to step 1.

If you want to eject the tip, press 

Note: It is possible to interrupt the dispensing by pressing the ENTER button 

. The display shows E and the tip can be emptied by pressing the START button .

Note: When aspirating the liquid using the 25 or 50 ml tip, let the tip stay in the liquid a few seconds after the plunger has stopped moving. This way you will ensure that all liquid has been aspirated into the tip.

Note: It is possible to work with aqueous liquids and liquids with higher viscosity. However, it is recommended always to choose the tip with the smallest applicable volume in conjunction with high viscosity liquids. Please note, the specifications are given in accordance with ISO8655-5.

6. MAINTENANCE

6.1. Cleaning the dispenser

To ensure trouble-free operation it is recommended to apply regular maintenance and cleaning to Biohit *e*LINE Lite Dispenser.

To clean and decontaminate the outer surface use Proline Biocontrol (Cat. No. 724004) and a soft lint-free cloth. Gently clean the surface of the pipette with the moistened cloth and wipe dry. It is possible to use ethanol (70%) isopropanol (60%) or mild detergent as a cleaning agent.

Note: Remove the battery pack from the dispenser prior the cleaning!
It is recommended always to use gloves when cleaning the dispenser. Do not let the liquid enter the pipette handle!

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6.2. Battery replacement

The design of the Biohit *e*LINE dispenser enables fast and easy battery replacement. The battery replacement pack includes 4 NiMH batteries fixed to the battery cover. If the batteries do not hold a sufficient charge for proper operation follow these steps for replacement of the battery pack.

1. Hold the dispenser in a horizontal position with the display facing up.
2. Press the two charging contacts simultaneously to release the battery pack.
3. Place the new battery pack into the compartment and close the battery cover by pressing it lightly.



Fig. 10.

Note: The battery cover pack fits in to the compartment one way only. If the pack is inserted incorrectly the battery cover will not close properly.

Note: Only use battery packs supplied by the manufacturer. The use of any other type of battery will immediately void the warranty!

7. TROUBLESHOOTING

The Biohit *e*LINE Lite Dispenser have a onboard monitoring program to control the performance of each pipetting action. If any error message appears to the display it means that the Dispenser has been unable to perform the attempted action properly. In case of an error the display will show ER and PRSS ENT. message. To clear the message please follow these steps:

1. Clear the error message by pressing 

. The display will show E and ▼.
2. Press the  and the blunger moves to the home-position. The display will show E and TIP.
3. Remove the tip by pressing the tip ejection button 

Note: Repeated occurrence of error messages indicates an internal error causing failure of the Dispenser to complete the execution of the pipetting. The Dispenser therefore needs to be returned to the nearest Biohit Service Centre or your local Biohit service representative for repair.

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Symptom	Possible cause	Solution
Display is blank and there is no response when pressing the buttons	Battery is fully discharged	Recharge the battery
Leakage or pipetted volume too small	Tip incorrectly attached Unsuitable tip Foreign particles between the tip and tip connector	Attached new tip Attach firmly Use original tips Clean the tip connector and attach new tip
Dispenser out of the established specifications	Unsuitable tip Instrument damaged	Use original tips Return to your Biohit service representative for servicing
Tip ejector jammed or moves erratically	Tip connector has been contaminated Tip connector mechanism damaged	Clean the Tip connector Return to your Biohit service representative for servicing
Continuous error message	Instrument damaged	Return to your Biohit service representative for servicing

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8. WARRANTY INFORMATION

Biohit *e*LINE Lite Dipenser is covered by a warranty for two years against defects in material and workmanship (excluding the battery pack). Should your dispenser fail to function according to specifications at any time, please contact your local Biohit representative immediately.

ANY WARRANTY WILL, HOWEVER, BE DEEMED AS VOID IF FAULT IS FOUND TO HAVE BEEN CAUSED BY MALTREATMENT, MISUSE, UNAUTHORIZED MAINTENANCE A OF SERVICE OR NEGLIGENCE OF REGULAR MAINTENANCE AND SERVICE, ACCIDENTAL DAMAGE, INCORRECT STORAGE OS USE OF THE PRODUCTS FOR OPERATIONS OUTSIDE THEIR SPECIFICATIONS, CONTRARY TO THE INSTRUCTIONS GIVEN IN THIS MANUAL OR WITH OTHERTHAN THE MANUFACTURER'S ORIGINAL TIPS.

Each Biohit *e*LINE Lite Dispenser is tested before shipping by the manufacturer. The Biohit Quality Assurance Procedure guarantees that the Biohit *e*LINE Lite Dispenser you have purchased is ready for use.

Each Biohit *e*LINE Lite Dispenser is CE-marked, fulfilling the requirements of the EN 55014, 1993 / EN 55104, 1995 / ISO 13485:2003 and IVD Directive (98/79/EC).

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9. PERFORMANCE SPECIFICATIONS

Note: The manufacturer's specifications should be used as guidelines when establishing your own performance specifications accordance with ISO 8655-5.

eLINE Lite Dispenser and Biohit Dispenser Tip system

Tip volume (ml)	Volume min/ max (µl)	Increment (µl)	Test volume (µl)	Inacc. (%)	Impr. (%)	Number of dispensing min/max
0.1	1/100	0.2	100 10	1.00 1.00	0.50 2.00	1/100
0.2	2/200	0.4	200 20	1.00 1.70	0.50 2.50	1/100
0.5	5/500	1	500 50	0.80 1.00	0.60 3.00	1/100
1.0	10/1000	2	1000 100	0.50 0.50	0.20 0.60	1/100
2.5	25/2500	5	2500 250	0.60 0.60	0.20 0.40	1/100
5.0	50/5000	10	5000 500	0.60 0.60	0.15 0.50	1/100
10.0	100/10 000	20	10 000 1000	0.40 0.40	0.20 1.00	1/100
25.0	500/25 000	50	25 000 2500	0.50 0.50	0.15 0.50	1/50
50.0	1000/50 000	100	50 000 5000	0.30 0.30	0.15 0.70	1/50

Note: The specifications are valid only to the *e*LINE Lite Dispenser and Biohit *e*LINE Dispenser Tip combination.

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10. RECYCLING INSTRUCTION (WEEE)



In compliance with European Directive, WEEE (2002/96EC) on waste and reducing of hazardous substances in electrical and electronic equipments, this device must not be recycled as unsorted municipal waste. Instead this device must be collected separately in accordance the local recycling regulations. The solid bar used in conjunction with the crossed-out wheeled bin indicates that the product was put on the European market after 13 August 2005.

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*e*LINE® *Lite* Dispenser

Instruction Manual

Due to Biohit's continuing R&D effort, specifications may change without prior notice. Biohit Proline innovations are covered by multiple patents including U.S. Pat. 5,343,769, U.S. Pat. 5,505,097 and patents pending. Biohit *e*LINE® is a registered trademark of Biohit Plc.

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